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### **EarthScope and USArray**

USArray is a continental scale seismic observatory designed to provide a structured yet flexible foundation for integrated studies of the continental lithosphere and deep Earth structure over a wide range of scales. USArray integrates a dramatic improvement in the resolution of seismic images of the continental lithosphere and deeper Earth with a diversity of geological data to address significant unresolved issues of continental structure, evolution, and dynamics. As an observational tool, USArray can provide new insight and new data to address fundamental questions in earthquake physics, volcanic processes, core-mantle interactions, active deformation and tectonics, continental structure and evolution, geodynamics, and fluids (magmatic, hydrothermal, and meteoric) in the crust.

The USArray facility will consist of three major seismic components: (1) a transportable array of 400 broadband seismometers that will systematically cover the US; (2) a flexible array of more than 2000 seismometers of various types designed to augment the transportable array so that a range of specific targets can be addressed in a focused manner; and (3) a permanent network, developed in coordination with the US Geological Survey, to enhance national earthquake monitoring as part of the Advanced National Seismic Network.

The goal of this layered design is to achieve imaging capabilities that flexibly span the continuous range of structures from whole Earth, through lithospheric and crustal, to local scales.